MPG 8040.1
REVISION C
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MARSHALL PROCEDURES AND GUIDELINES

ED01

CONFIGURATION MANAGEMENT, MSFC PROGRAMS/PROJECTS

DOCUMENT HISTORY LOG

Status (Baseline/ Revision/ Canceled)	Document Revision	Effective Date	Description
Baseline		5/14/99	Document converted from MSFC-P04.2 to a Directive. Previous history retained in system as part of canceled or superseded ISO Document files.
Revision	A	8/20/99	Changed "Chief Engineer" to indicate Program/Project Manager or Systems Engineer throughout document. P.2: Revised to state that during the formulation phase, provisions shall be made for initiation of CM requirements via a CMP tailored to the Program, Project, or activity. Also revised to state that the requirements of this procedure apply during formulation and implementation phases. P.4: Deleted MM 8040.12; added MWI 8040.3, MIL-STD-100, MIL-STD-961, and MIL-STD-973. P.5: Added MMI 8040.15. P.6, 3.1, 3.2: Cancelled MM 8040.12; detailed data requirement information incorporated into Configuration Management standard Data Requirements Descriptions. Section 3: In first paragraph, deleted "in accordance with MMI 8040.15" and added the last sentence. 3.1: Added last two sentences. 3.2: Changed last sentence to read: "Contract requirements for change control shall be in accordance with the requirements of MIL-STD-973, except as modified in the contract data requirements descriptions, and the use of MSFC forms will be used for engineering changes, waivers, and deviations." 3.2 and 3.3.2: Added MWI 8040.3 for deviation and waiver process. 3.2.5: Added "DAR's" and "MWI 8040.3." 3.4.1: Added last sentence. Flow Diagram: Blocks 3.1 and 3.2: Deleted MM 8040.12. Block 3.2, added MWI 8040.3.
Revision	B	3/22/00	P.1, 2nd sentence: Changed to "This procedure addresses the planning and implementation of the basic . . ." In last sentence, changed to ". . . configuration management requirements . . ." P.2, Exception: Changed to "All programs/projects initiated . . ." In 3rd sentence, changed to "All new Programs/Projects initiated . . ." P.4: Deleted MSFC-MNL-1833 and MPG 1441.1; added MWI 7120.4 and MPG 1440.2.; renumbered section. P.6: Changed to: "Cancelled MPG 8040.1A dated August 20, 1999." 1.9: Added definition for Configuration

			Documentation and renumbered remainder of section. 1.18: Changed "Documentation Release System (DRS)" to "Integrated Configuration Management System (ICMS)" and ". . . MSFC drawings, specifications, and documents" to ". . . configuration documentation." Renumbered remainder of the section. 1.29: Changed definition of specification to read: A document which clearly and accurately describes essential technical and interface requirements for products and the criteria for determining whether those requirements are met." Renumbered paragraphs to end of section. 1.29 (former number): Deleted definition of SCN/DCN. 2.1: Deleted "Quality" in last sentence. 2.3: Changed to read: "Personnel responsible for preparing or assisting in the preparation of . . ." 3.1: Added second sentence: "Document preparation instructions are specified in MWI 7120.4." In third sentence, changed to read: "Release of in-house-developed. . . and will be implemented on all configuration documentation." 3.1.3: In first sentence, changed "design" to "implementation" phase. 3.1.4: In first sentence, changed to read: ". . . at the end of the design and development portion of the implementation phase." 3.1.5: In first sentence, changed to read: ". . . prior to operational portion of the implementation phase." 3.2.2.5: Changed 1st sentence to read: "Managers for Project Offices may authorize the establishment of a Level IV CCB, designate the Chair, and identify the baseline level to be controlled by the Level IV CCB." 3.3.1.1.i: Deleted "SCN's, DCN's." 3.3.2: Changed "Documentation Release System (DRS)" to "Integrated Configuration Management System (ICMS)." Added: "ICMS provides data on the release status of configuration documentation and configuration documentation changes, and maintains the parts list information which captures the detailed "as-designed" configuration for a configuration item. Changed last sentence to read: ". . . requirements of MSFC-STD-555 and MWI 8040.3." 3.4: Changed paragraph heading to "Functional and Physical Configuration Audits and CM System Audits." Change 1st sentence to read: "Functional and Physical Configuration Audits and CM System Audits are the processes for . . ." 3.4.1: Changed paragraph heading to "Functional and Physical Configuration Audits." 4: Deleted "Quality" and changed "MPG 1441.1" to MPG 1440.2." 5: Block 3.3: Deleted "MSFC-MNL-1833." Block 3.4: Changed "Configuration Verification/Audits" to "Functional and Physical Configuration Audits and CM System Audits."

Revision	C	6/14/01	P.2, 5th line deleted "which complied with MMI 8040.15." P4.d - Deleted MPG 8060.1. P4.j - Replaced "MSFC-PROC-1916" with "MWI 8040.7, Configuration Management Audits, MSFC Programs/Projects." P4.o - Changed to include Interim Notices 1 through 3, dated January 13, 1995. Added P4.p - "MWI 8040.6, Functional and Physical Configuration Audits, MSFC Programs/Projects." P5 -Deleted a reference to MMI 8040.5, Configuration Management. P6 - Cancelled MPG 8040.1B, dated March 22, 2000. 1.5 deleted "MPG 8060.1" and replaced with "MWI 8040.6." 3.4.1, Deleted all references to "MPG 8060.1" and replaced with "MWI 8040.6." 3.4.2, Deleted "MSFC-PROC'1916" and replaced with "MWI 8040.7." 5. Changed flow diagram block 3.4 to delete MPG 8060.1 and MSFC-PROC-1916 and replace with MWI 8040.6 and MWI 8040.7. [Footer URL updated 01/14/2004 by Directives Manager.]

TABLE OF CONTENTS

PREFACE

P.1. PURPOSE

This Marshall Procedures and Guidelines (MPG) provides a consistent and systematic method to implement policies and the Configuration Management requirements of MPD 1280.1, "Marshall Management Manual" (MMM). This procedure addresses the planning and implementation of the basic Configuration Management (CM) functions: Configuration Identification, Configuration Control, Configuration Accounting, and Configuration Audits. This MPG establishes the method for implementing CM for programs and projects for which MSFC has responsibility. Implementation of this procedure will satisfy the configuration management requirements of NPD 7120.4 and MPD 1280.1.

P.2 APPLICABILITY

The requirements in this procedure are applicable to all elements of MSFC that have responsibility for implementing CM for programs and projects for which MSFC has responsibility. Exception: All programs/projects initiated prior to September 1, 1997, having an approved Configuration Management Plan (CMP), are exempt from the requirements of this procedure. All new programs/projects initiated subsequent to September 1, 1997, are required to meet the requirements in this procedure. CM is applicable to flight, qualification, protoflight, designated development hardware/software, configuration item (CI)-associated support equipment, and CI-unique facilities. During the formulation phase, provisions shall be made for initiation of CM requirements via a CMP tailored to the program, project, or activity in accordance with MWI 8040.1 and in compliance with this procedure. The requirements of this procedure apply during formulation and implementation phases and continue for the life cycle of the CI.

P.3 AUTHORITY

MPD 1280.1, "Marshall Management Manual"

P.4 APPLICABLE DOCUMENTS

a. MIL-DTL-31000, "Technical Data Packages"

b. MSFC-MNL-1951, "Change Processing, Tracking, and Accounting System (CPTAS) User's Guide"

c. MPD 1280.1, "Marshall Management Manual"

d. MWI 7120.4, “Documentation Preparation, Programs/Projects”

e. MWI 8040.1, “Configuration Management Plan, MSFC Programs/Projects”

f. MWI 8040.2, “Configuration Control, MSFC Programs/Projects”

g. MWI 8040.3, “Deviation and Waiver Process, MSFC Programs/Projects”

h. MPG 1440.2, “MSFC Records Management Program”

i. MWI 8040.7, "Configuration Management Audits, MSFC Programs/Projects"

j. MSFC-STD-555, “MSFC Engineering Documentation Standard”

k. NPD 7120.4, “Program/Project Management”

l. MIL-STD-100, “Engineering Drawing Practices”

m. MIL-STD-961, “Defense Specifications”

n. MIL-STD-973, April 17, 1992, and Interim Notices 1 through 3, January 13, 1995, “Configuration Management”

o. MWI 8040.6, "Functional and Physical Configuration Audits, MSFC Programs/Projects"

P.5 REFERENCE

None

P.6 CANCELLATION

MPG 8040.1B dated March 22, 2000

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Director

DOCUMENT CONTENT

1. DEFINITIONS

1.1 Change Processing, Tracking, and Accounting System (CPTAS). An interactive data processing system that provides configuration management information, change accountability, engineering documentation control, consistent processing of documentation, and conformity to all applicable standards.

1.2 Change Request (CR). A proposed engineering change normally used by Level II Configuration Control Board (CCB) outside MSFC to propose or direct a change to requirements baselines controlled at Level II.

1.3 Configuration. The functional and physical characteristics of a product (hardware, firmware, software, or a combination thereof) as defined in technical documentation and achieved in a product.

1.4 Configuration Accounting. Formalized recording and reporting of the established configuration documents, the status of proposed changes, and the status of the implementation of approved changes.

1.5 Configuration Audits. Formal examinations to determine whether a CI conforms to its configuration documents. (See MWI 8040.6.)

1.6 Configuration Baselines. A configuration baseline consists of all approved documents that represent the definition of the product at a specific point. The three basic baselines and the design activity baseline are established sequentially as follows:

1.6.1 Design Activity Internal Baseline. Activities responsible for MSFC hardware, firmware, and software design and development shall establish internal release and control systems for product configuration identification documentation that will establish the product baseline at the end of the design and development phase. This documentation should be released prior to start of build of the qualification units or product that will be delivered for flight or operations. Design activity control shall be exercised during the building and testing of the hardware, firmware, and software.

1.6.2 Development Baseline (DBL). The initially approved documentation describing CI functional and interface characteristics that are allocated from those of a higher-level

CI, interface requirements with interfacing CIs, additional design constraints and the verification required to demonstrate the achievement of those specified functional and interface characteristics.

1.6.3 Functional Baseline (FBL). The initially approved documentation describing a system or CI functional characteristics and the verification required to demonstrate the achievement of those specified functional characteristics.

1.6.4 Product Baseline (PBL). The initially approved documentation describing the necessary functional and physical characteristics of the CI and the selected functional and physical characteristics designated for production acceptance testing and tests necessary for support of the CI.

1.7 Configuration Control. The systematic definition, evaluation, coordination, and disposition of each proposed change, deviation, or waiver, and the implementation of each approved change in the configuration of a CI after formal establishment of configuration identification. See MWI 8040.2 for additional definitions related to configuration control.

1.8 Configuration Control Board (CCB). The functional body responsible for establishing baselines and reviewing and dispositioning of all changes, deviations, and waivers to these baselines.

1.9 Configuration Documentation. The program/project-specific technical documentation (drawings, parts lists, specifications, standards, interface control documents/drawings, and documents invoked therein) that identifies and defines the item's functional and physical characteristics. The configuration documentation is developed, approved, and maintained through three distinct evolutionary increasing levels of detail. The three levels of configuration documentation are the functional configuration documentation, the development configuration documentation, and the product configuration documentation.

1.10 Configuration Identification. Configuration identification includes the selection of CIs; the determination of the types of configuration documentation required for each CI; the issuance of numbers and other identifiers affixed to the CIs and to the technical documentation that defines the CI configuration, including internal and external interfaces; the release of CIs and their associated configuration documentation; and the establishment of configuration baselines for CIs.

1.11 Configuration Item (CI). An aggregate of hardware, firmware, software, or any of its discrete portions, which satisfies an end-use function and is designated for CM. CIs may vary widely in complexity, size, and type. A CI can be identified as a Hardware Configuration Item (HWCI) or a Computer Software Configuration Item (CSCI).

1.12 CI-Associated Support Equipment. Any mechanical, electrical, or electro-mechanical equipment, e.g., handling fixture or test set, which is a part of a program/project CI which interfaces with the CI and which is designated for CM.

1.13 CI-Unique Facility. Any fixed installation, e.g., test stand or launch mechanism, which is part of a program/project CI and interfaces with the CI. This includes real property and installed equipment. This does not include the normal "brick and mortar," utilities, fluid/gas delivery systems, or other delivery systems that do not affect the end-use function of the CI or that are not controlled by applicable CI programs/projects.

1.14 Configuration Management (CM). A discipline applying technical and administrative direction and surveillance over the life cycle of a CI to accomplish the following tasks:

1.14.1 Identify and document the functional and physical characteristics of a CI.

1.14.2 Control changes, deviations, and waivers to these technical requirements.

1.14.3 Record and report change processing and implementation status.

1.14.4 Verify that the configuration of systems and CIs are as specified in configuration identification documentation.

1.15 Configuration Verification. The technical reviews and audits necessary to verify that the configuration of systems and CIs are in compliance with configuration identification documentation.

1.16 Design Activity. An activity having responsibility for the design of an item. The activity may be a Government, commercial, or nonprofit organization.

1.17 Deviation. A specific written authorization, granted prior to the manufacture of an item, to depart from a particular requirement(s) of an item's current approved configuration for a

specific number of units or a specified period of time.

1.18 Integrated Configuration Management System (ICMS). An interactive data processing system for MSFC that provides documentation release information for tracking configuration documentation. The ICMS allows the user (designer/engineer) to integrate an assembly and its component parts on the ICMS data base, providing them with line item control and correlation of all related data elements.

1.19 Engineering Change Request (ECR). A proposed engineering change used by MSFC personnel to submit documentation for initial baselining or to process changes to the baseline for evaluation and disposition by the appropriate CCB.

1.20 Field Engineering Change (FEC). The method for proposing engineering changes at NASA using sites on equipment for which MSFC retains design responsibility and for which time is not adequate for preparation and processing of an engineering change.

1.21 Firmware. The combination of a hardware device and computer instructions and/or computer data that resides as read-only software in the hardware device.

1.22 Installation Notice Card (INC). A form used after CI delivery to update the CM system and to certify that a particular modification package or FEC has been installed, tested, verified, and accepted in accordance with its associated change modification instructions.

1.23 Interface. Physical or functional interaction at the boundary between configuration items.

1.24 Interface Revision Notice (IRN). The form used to record approved changes to baselined interface documents.

1.25 Modification (Mod) Kit. A package containing necessary released documentation, hardware, software, and modification instructions to incorporate an approved engineering change into delivered CIs.

1.26 Preliminary Interface Revision Notice (PIRN). An IRN form used to describe proposed changes to baselined interface documents.

1.27 Program Control Number (PCN). A unique number assigned to the first item of a change package that initiates a particular engineering change. The same number is assigned to all

subsequent actions and documentation associated with that engineering change which, together with the initial engineering change document, is recognized as a change package.

1.28 Software. A combination of associated computer instructions and computer data definitions required to enable the computer hardware to perform computational or control functions.

1.29 Specification. A document which clearly and accurately describes essential technical and interface requirements for products and the criteria for determining whether those requirements are met.

1.30 System. A composite of equipment, skills, and techniques capable of performing and/or supporting an operational role. A complete system includes all equipment, related facilities, material, software, services, and personnel required for its operation and support to the degree that it can be considered a self-sufficient item in its intended operational environment.

1.31 Waiver. A written authorization to accept an item, after manufacture, or after being submitted for Government inspection or acceptance, that is found to depart from specified requirement(s), but nevertheless is considered suitable for use "as is" or after repair by an approved method.

2. RESPONSIBILITIES

2.1 Program/Project Manager. Person responsible for the planning, definition, and timely accomplishment of a task or activity necessary for implementing the requirements of this document. Ensure that the product requirements are documented and changes to the requirements are controlled and records maintained to show the status of the program/project. Ensure that audits are conducted to verify that the product meets the documented requirements. Ensure proper identification and disposition of records.

2.2 Program/Project Manager or Systems Engineer. Person responsible for ensuring the adequacy of inputs/outputs, technical specifications, and interface functions necessary to define the design-to requirements and that the detail design meeting development requirements are documented and verified. Support the program/project manager in evaluating changes, deviations, and waivers. Support the program/project manager in conducting reviews and audits.

2.3 Configuration Management Personnel. Personnel responsible

for preparing or assisting in the preparation of the CM plan, baselining the development and production documentation, providing change control support, providing configuration status accounting support, and providing support to CM audits.

2.4 Safety and Mission Assurance Office. Personnel responsible for supporting the program/project to ensure that the quality assurance requirements for the product are in compliance with program/project requirements, and to support reviews and audits as required.

2.5 Responsible Design Organization. Ensure that the product design meets the development requirements and that the detail design has been documented in accordance with program/project requirements.

2.6 Configuration Control Board Members. Support the program/project in evaluating changes and provide inputs for change resolution.

3. PROCEDURE

A CM program shall be implemented during the MPD 1280.1-defined formulation phase. The MSFC program and/or project manager has the overall responsibility for ensuring the requirements of this document are implemented. The unique requirements for the specific program and/or project will be recorded in the CMP prepared in accordance with MWI 8040.1. The CMP will be maintained current through the program and/or project life cycle. The contract for configuration item development shall contain a requirement for a configuration management plan prepared in accordance with the requirements of MIL-STD-973.

The detailed requirements for each program and/or project will be different; however, the basic requirements for each will be the same. The requirements for configuration identification, configuration control, configuration status accounting, and verification and audits as defined in this document will be implemented for each program and/or project.

	Actionee	Action
	Program and/or Project Manager	Provide direction for configuration management planning, preparation, and implementation of the CMP.
3.1	Program and/or Project Manager, Systems Engineer, CM personnel, and responsible design organization	Configuration Identification. Configuration identification defines requirements for CIs through the use of specifications (hardware and software), interface documentation (hardware and software), drawings, and associated data. Document preparation instructions are specified in MWI 7120.4. Release of in-house-developed CIs will be in accordance with MSFC-STD-555, "MSFC Engineering Documentation Standard," and will be implemented on all configuration documentation. Configuration identification for items developed by a contractor(s) will include requirements for a technical data package in accordance with the appropriate requirements of MIL-DTL-31000. The data requirements description for specifications shall comply with MIL-STD-961, Appendix A. The drawing and parts list required for the configuration documentation shall comply with the requirements of MIL-STD-100.
3.1.1		Baseline Identification. MSFC program/project and design activities shall use a series of technical reviews and audits to establish successive configuration baselines and to provide subsequent configuration control. Baseline identification is detailed as follows:
3.1.1.1		Functional Baseline Identification. The Functional Baseline (FBL) shall be established on hardware, firmware, and software developed by MSFC or under MSFC program or project development contracts. The FBL shall identify program or project

performance requirements in the form of system(s) specification and associated interface requirements documents, if required. (Note: When a program has more than one project, the functional baseline will normally be established at the program level and each project will be defined by the development baseline identification.)

3.1.1.3 Development Baseline Identification. The Development Baseline (DBL) shall be established prior to the start of the implementation phase. The DBL shall be defined by performance-oriented specifications governing the development of CIs, in which each specification: (1) defines the functional characteristics that are allocated from those of the system or higher-level CI; (2) establishes the verification required to demonstrate achievement of its allocated functional characteristics; (3) delineates necessary interface requirements with other associated CIs; and (4) establishes design constraints, if any, such as component standardization, use of inventory items, and integrated logistics support requirements.

3.1.1.4 Design Activity Internal Baseline. The design activity baseline will be established as the design and development evolves and will be the documents that will establish the product baseline at the end of the design and development portion of the implementation phase. This documentation should be under CM control at the conclusion of the Critical Design Review (CDR) and prior to start of build of the qualification units or product that will be delivered for flight or operations.

3.1.1.5 Product Baseline Identification. The Product Baseline (PBL) shall be established prior to the operational

portion of the implementation phase. The PBL shall be defined by specifications, drawings, parts lists, and documents specified thereon. Maintenance of PBL is required from start of production through operation.

3.2 Program and/or Project Manager, Systems Engineer, S&MA, CM personnel, and designated CCB members. Configuration Control. Configuration control is the systematic process of presentation, evaluation, and disposition of proposed changes and the implementation of approved changes into hardware, firmware, and software baselined documentation. Configuration control begins with the establishment of initial configuration baseline and continues through the program and/or project life cycle. Detailed requirements and instructions for in-house configuration control are defined in MWI 8040.2. Contract requirements for change control shall be in accordance with the requirements of MIL-STD-973, except as modified in the contract data requirements descriptions, and the use of MSFC forms will be used for engineering changes, waivers, and deviations. The deviation and waiver process is defined in MWI 8040.3.

3.2.1 Configuration Control Boards. Configuration Control Boards (CCBs) shall be instituted for the purpose of controlling and authorizing changes, deviations, and waivers to configuration documentation. Lower-level CCBs shall prepare and process evaluations and prepare recommendations to higher-level CCBs for baselines established at these higher levels.

3.2.2 CCB Levels. The control of configuration baselines, changes, deviations, and waivers will be achieved through the use of a multilevel change control system. The level of control and authority is established as indicated below:

Level	Authority
I	NASA Headquarters
II	Program/Lead Center
III	Project Manager
IV	Project Manager or Systems Engineer

The functions of the various CCB levels are summarized in subsequent paragraphs.

3.2.2.1 Level I CCB. The Level I CCB is established by authority of the NASA Headquarters Program Associate Administrator and chaired by the NASA Headquarters Program Associate Administrator or designee. This CCB is the controlling authority of all baselines and changes to the Level I program requirements. Functions, duties, and membership of the Level I CCB are established by the NASA Headquarters Program Associate Administrator. Level I CCB support at MSFC is through the appropriate lower-level CCBs.

3.2.2.2 Level II CCB Outside MSFC. When another NASA Center is designated as the Lead Center for a program with elements at various Centers, including MSFC, the Lead Center Program Manager will establish a Level II CCB. MSFC support of Level II CCBs residing at locations other than MSFC shall be through the appropriate Level III CCB.

3.2.2.3 Level II CCB at MSFC. When MSFC is designated as the Lead Center for a program with elements at various NASA Centers, the Level II CCB shall be established at MSFC. The MSFC Level II CCB shall be the authority for establishing configuration baselines and changes to these configuration baselines. The Level II CCB shall submit all actions affecting Level I requirements to the Level I CCB with a recommended disposition.

3.2.2.4 Level III CCB. Managers for project offices shall establish Level III CCBs to establish configuration baselines and control changes to these baselines. Level III CCBs shall submit all changes affecting Level I or Level II requirements to the Level II CCB with a recommended disposition. Level III shall review Level II CRs and submit a consolidated CE to Level II.

3.2.2.5 Level IV CCB. Managers for Project Offices may authorize the establishment of a Level IV CCB, designate the Chair, and identify the baseline level to be controlled by the Level IV CCB. Level IV shall submit all changes affecting Levels I, II, or III requirements to the Level III CCB with a recommended disposition. The Level IV CCB will review Level II and III CRs, ECRs, and ECPs and submit a consolidated change evaluation to Level III.

3.2.3 Change Criteria. Changes, deviations, and waivers are limited to those which offer significant benefit and meet one or more of the following:

a. Correct safety, design, and performance deficiencies.

b. Satisfy change in operational or support requirements.

c. Effect overall cost savings.

d. Prevent or control program/project slippage.

e. Implement design improvements.

f. Implement performance requirement changes.

g. Establish or maintain interface compatibility.

3.2.4 Change Priority. Change priority shall be assigned by the change initiator, with a proposed priority of **emergency**, **urgent**, or **routine** in accordance with the following criteria:

a. Emergency. The change initiator shall assign this priority if the proposed change is to correct a safety condition that could result in fatal or serious injury to personnel or in extensive damage to, or destruction of, equipment.

b. Urgent. The change initiator shall assign this priority if the proposed change is to correct a potentially hazardous condition which, if uncorrected, could result in injury to personnel or in damage to equipment and reduction of mission effectiveness. A potentially hazardous condition that compromises safety and embodies risk, but within reasonable limits, permits continued use of the affected item provided the operator has been informed of the hazard and appropriate precautions have been defined and distributed to the user. This priority shall also be used for the following:

(1) Changes necessary to meet schedules when longer lead time would necessitate slipping baselined production, activation, or construction schedules.

(2) Mission capability changes when delay would compromise the mission capability and result in unacceptable contract, production, or mission launch schedules.

(3) Changes associated with interface problems resulting from compatibility changes made by other design activities or contractors.

c. Routine. The change initiator shall

assign this priority to a proposed change when *Emergency* or *Urgent* is not applicable.

The priority shall determine the relative timeframe in which the changes are to be dispositioned by MSFC. Maximum MSFC processing times allocated from initial submission to the CCB Secretariat through CCBD disposition shall be as follows:

Priority	Process Time
Emergency	48 hours
Urgent	14 calendar days
Routine	28 calendar days

3.2.5 Configuration Control Procedures. The configuration control process and detailed requirements for establishing the CCB charter, PCN assignment, change processing, change evaluation, change implementation, modification kit identification and implementation verification, processing changes, DARs, and implementation requirements are defined in MWI 8040.2 and MWI 8040.3.

3.3 CM Personnel Configuration Status Accounting. Configuration status accounting shall be exercised by all elements of MSFC. Configuration status accounting shall provide traceability of configuration identification documentation and changes thereto.

Configuration status accounting shall:

a. Identify released configuration documentation.

b. Establish and maintain engineering release records.

c. Maintain status records of all changes.

d. Provide status reports.

3.3.1 Change Processing, Tracking, and Accounting System (CPTAS). Configuration baseline and change tracking at MSFC shall be accomplished using CPTAS. Implementation and utilization of CPTAS shall be as specified in MSFC-MNL-1951, unless otherwise directed by program requirements.

3.3.1.1 Configuration Status Accounting Data. CPTAS provides data on the status of systems, CIs, and changes including, but not limited to, the following:

a. PCNs for each change processed in the CM system.

b. Change proposal/request number, date including change revisions, and reference to earlier actions.

c. Title, number, revision letter, and issue date of each specification, document, or drawing.

d. Date the document/drawing is baselined.

e. Effectivity.

f. Serial number of units affected.

g. CCBD number, date, and disposition.

h. Contract authorization documentation and date.

i. Listings of documentation with associated PIRNs, IRNs, etc.

j. For changes requiring mod kits, serial numbers and location of each item to be modified.

k. Scheduled ship dates for mod kits.

l. Date each modification is installed.

3.3.1.2 Reports. CM status reports shall be generated and distributed as required by the project or design activity manager. Available information shall meet specific program and/or project needs. Reports that may be generated from data residing in CPTAS are listed in MSFC-MNL-1951.

3.3.2 Integrated Configuration Management System (ICMS). ICMS provides data on the release status of configuration documentation and configuration documentation changes, and maintains the parts list information which captures the detailed "as-designed" configuration for a configuration item. Drawings, EPLs, EOs, specifications, and DRLs shall be prepared for engineering release to implement original or changed configuration documentation. MSFC design activities shall follow release requirements of MSFC-STD-555 and MWI 8040.3.

3.4 Program and/or Project Manager, Systems Engineer, S&MA, and CM personnel Functional and Physical Configuration Audits and CM System Audits. Functional and Physical Configuration Audits and CM System Audits are the processes for applying technical reviews and audits to verify the configuration item's and system's performance against the approved configuration documentation; that hardware, firmware, and software have been properly identified, released, and controlled throughout the life cycle; and that the proper data has been maintained and reports generated to verify the configuration.

3.4.1 Functional and Physical Configuration Audits. MSFC uses configuration audits held at the conclusion of the design and development phases of a CI to ensure that the product complies with its specified requirements and to ensure the product is accurately reflected by its configuration identification documents. The Functional

and Physical Configuration Audits will be conducted in accordance with MWI 8040.6 before acceptance of the CI for flight or ground operations. Contracts for configuration item development that require functional and physical configuration audits as required in this document and MWI 8040.6 shall include requirements for compliance with MIL-STD-973.

3.4.2 Configuration Management System Audits. Each program and/or project office shall ensure that periodic CM system audits of contractors and in-house CM activities during development, production, and operation will be conducted. These audits shall be conducted by the program/project CM representative(s) with institutional support. These audits will verify the adequacy of compliance with CM requirements including identification of noncompliance(s) and corrective action as needed. Instructions for accomplishing a CM audit and documenting any discrepancies and observations are contained in MWI 8040.7.

4. RECORDS

Records and their retention schedules and disposition responsibility shall be identified in the CM plan and Marshall Work Instructions listed herein in accordance with MPG 1440.2.

5. FLOW DIAGRAM

CONFIGURATION MANAGEMENT, MSFC PROGRAMS/PROJECTS